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Matric No: 01ENG05/042

Course Code: ENG 382

Date: 04/03/2019

MECHATRONICS ENGINEERING

Assignment 4

$$\begin{bmatrix} 10m_1 - 2m_2 + m_3 = 9 \\ -2m_1 + 10m_2 + 2m_3 = 12 \\ -2m_1 - 5m_2 + 10m_3 = 18 \end{bmatrix}$$

at 0 iteration

$m_1 = 0$

$m_2 = 0$

$m_3 = 0$

at 1st iteration

$m_1 = 0.9$

$m_2 = 1.2$

$m_3 = 1.8$

at 2nd iteration

$m_1 = 0.96$

$m_2 = 1.74$

$m_3 = 2.58$

at 3rd iteration

$m_1 = 0.99$

$m_2 = 1.908$

$m_3 = 2.262$

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MATLAB FOR JACOBI METHOD

```
- Command Window
- clear
- clc
- Syms m
- m1 = 0
- m2 = 0
- m3 = 0
- for i = 1:20
- iter(i+1) = i
- m1(i+1) = ((0.2 * m2(i)) - (0.1 * m3(i)) + 0.9)
- m2(i+1) = ((0.2 * m1(i)) - (0.2 * m3(i)) + 1.2)
- m3(i+1) = ((0.2 * m1(i)) + (0.5 * m2(i)) + 1.8)
- Ea1(i+1) = abs((m1(i+1) - m1(i)) / m1(i+1) * 100
- Ea2(i+1) = abs((m2(i+1) - m2(i)) / m2(i+1) * 100
- Ea3(i+1) = abs((m3(i+1) - m3(i)) / m3(i+1)) * 100
- Ea = ((Ea1(i+1) + Ea2(i+1) + Ea3(i+1)) / 3)
- if Ea <= 17 - 15
-    break
-  end
- end
- tablo = [iter' m1' m2' m3' Ea']
```

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